DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-000415
Date Inspected: 03-Sep-2007

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

OSM Arrival Time: 630
OSM Departure Time: 1530
Location: Shanghai, China

CWI Name: Xiu Zhai Gu

Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**CWI Present:**	☑ Yes	☐ No	
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
				Approved WPS:	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☑ Yes	☐ No	☐ N/A

Bridge No: 34-0006
Component: N/A

Summary of Items Observed:

CALTRANS Quality Assurance (QA) Inspector, Alfredo Acuna was present for the fabrication of the Mock-up 77 and 114 meters elevations scheduled for this project at the ZPMC facility in Shanghai, China for the San Francisco Oakland Bay Self Anchored Suspension Bridge.

Mock-up 114

ZPMC, welder operator Han Changhou and welder Guo Dengyun were observed by the QA inspector performing welding operations on the skin panel D.
Mr. Han was observed by the QA inspector welding the root pass at the junction of the MA-110 to mp1016 skin panel D, joint # 1 following the approved welding procedure specification WPS-B-T-2321-B-P3-S-1. Base metal was designated as A-709 Grade 50. ZPMC was using the submerged arc welding (SAW) process in the flat (1G) position with the 4.8 mm diameter electrode designated as EM12K/AWS A5.17, brand name JW-3. The QA Inspector verified amperage, voltages, travel speed, preheat and heat interpass temperatures. The QA inspector found that the welding parameters recorded after ZPMC approved Certified Welder Inspector Xiu Zhai Gu appeared to be in accordance with the contract documents. ABF QA inspectors Kevin Dye, Kevin Carpenter and Dustin Brungardt were present during the testing.
However, after completing the root pass ZPMC/ ABF and Caltrans observed a melt-thru on the root approximately located at 800 mm from the edge of the plate see photo below.
ZPMC removed by grinding the melt-thru area at the root area (approximately 150 mm of weld metal and the face of the root). The QA inspector performed dimensional inspection to the root gap. The QA inspector found a root gap between 6 to 7 mm. See digital photograph attached. The QA inspector had a conversation with ABF

representatives Kevin Dye and Kevin Carpenter. The QA inspector asked to ABF representatives on how ZPMC was going to proceed since the root gap was not per WPS or AWS D1.5 2002 tables 2.4 and 2.5. Mr. Carpenter and Mr. Dye relayed to the QA inspector that ZPMC planned to weld the root by welding. ZPMC welded the 7 mm root gap bridging both side of the joint with the SMAW process. The QA inspector observed Mr. Guo performing welding operations following the parameters listed by the WPS-345-SMAW-1G (1F) Repair. ZPMC was using the Shielded Metal arc welding (SMAW) process in the flat (1G) position with the 4.0 mm diameter electrodes designated as E7018/AWS A5.1, brand name TL-508. The QA Inspector verified amperages, preheat and heat interpass temperatures. The QA inspector observed approved ZPMC Certified Welder Inspector Cui Yi Rui verifying welding parameters. Later on the shift before ZPMC performed magnetic particle testing (MT), the QA inspector observed a linear indication on the entire length of the repair area. The QA inspector brought to the attention of Mr. Dye, Mr. Brundardt and Mr. Song that the repair area was cracked. The photo below shows the repair area before and after the weld cracked. ABF requested ZPMC to submit for approval the repair at the skin panel D, repair located at the junction of plate MA110 and plate mp1016.
ZPMC, welders Li Dong and Guo Dengyun were observed by the QA inspector performing welding operations on the skin panel B.
Mr. Li and Mr. Guo were observed welding the run on tabs at the of the shop splice for the skin panel B at the junction of the plate MA102-1 and mp1015 with the SMAW process in the 1G and 3F position with the 4 mm diameter electrode designated as E7018/AWS A5.1, brand name TL-508.

Mock-up 77

ZPMC, welder operators Liu Xie and Zhang Xiagrong were observed by the QA Inspector performing welding operations on the skin panel C.
Mr. Liu was observed welding the filler and cover passes at the junction of the mp7 to skin panel C, joint # 6 following the approved welding procedure specification WPS-B-T-2332-TC-P5-F. Base metal was designated as A-709 Grade 50. ZPMC was using the automated submerged arc welding (SAW) process in the horizontal (2G) position with the 1.4 mm diameter electrode designated as E71T-1 /AWS A5.20, brand name Supercored. The QA Inspector verified amperage, voltage, travel speed, preheat and heat interpass temperatures for the filler passes. The QA inspector found that the welding parameters recorded after ZPMC approved Certified Welder Inspector Xiu Zhai Gu appeared to be in accordance with the contract documents. ABF QA inspector Kevin Dye was presented during welding.
Mr. Liu was observed welding the filler and cover passes at the junction of the mp7 to skin panel C, joint # 5 following the approved welding procedure specification WPS-B-T-2332-TC-P5-F. Base metal was designated as A-709 Grade 50. ZPMC was using the automated submerged arc welding (SAW) process in the horizontal (2G) position with the 1.4 mm diameter electrode designated as E71T-1 /AWS A5.20, brand name Supercored. The QA Inspector verified amperage, voltage, travel speed, preheat and heat interpass temperatures for the filler passes. The QA inspector found that the welding parameters recorded after ZPMC approved Certified Welder Inspector Xiu Zhai Gu appeared to be in accordance with the contract documents. ABF QA inspector Kevin Dye was presented during welding.

WELDING INSPECTION REPORT

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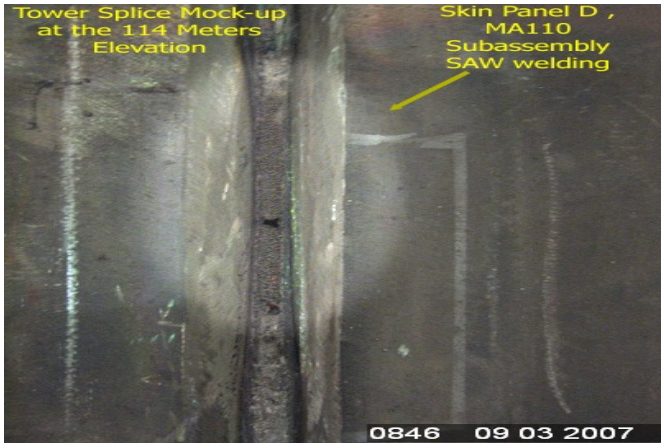

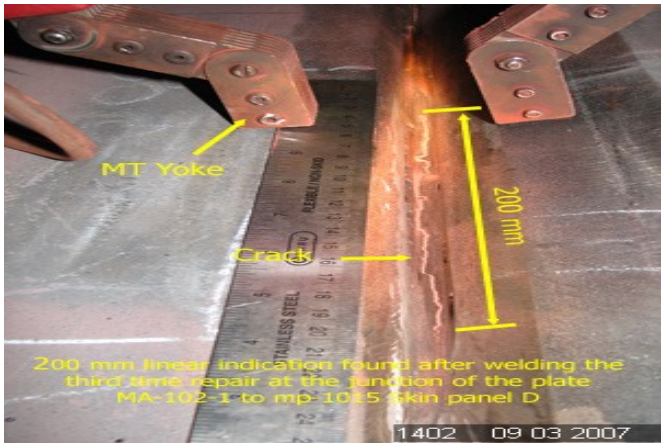

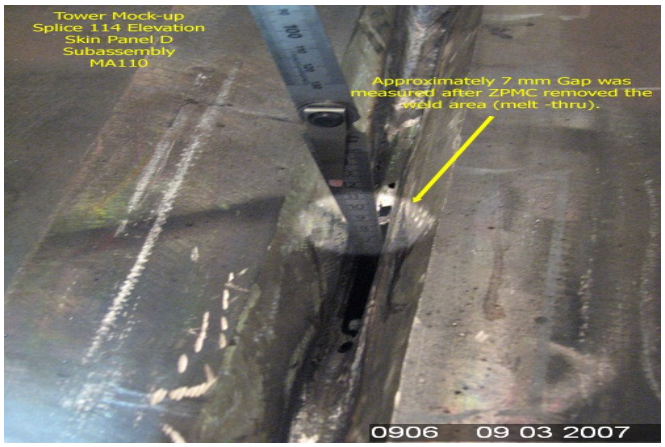

Summary of Conversations:

As noted above.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By:	Acuna,Alfredo	Quality Assurance Inspector
Reviewed By:	Cuellar,Robert	QA Reviewer